

Integration of the Silicon Pixels into sPHENIX

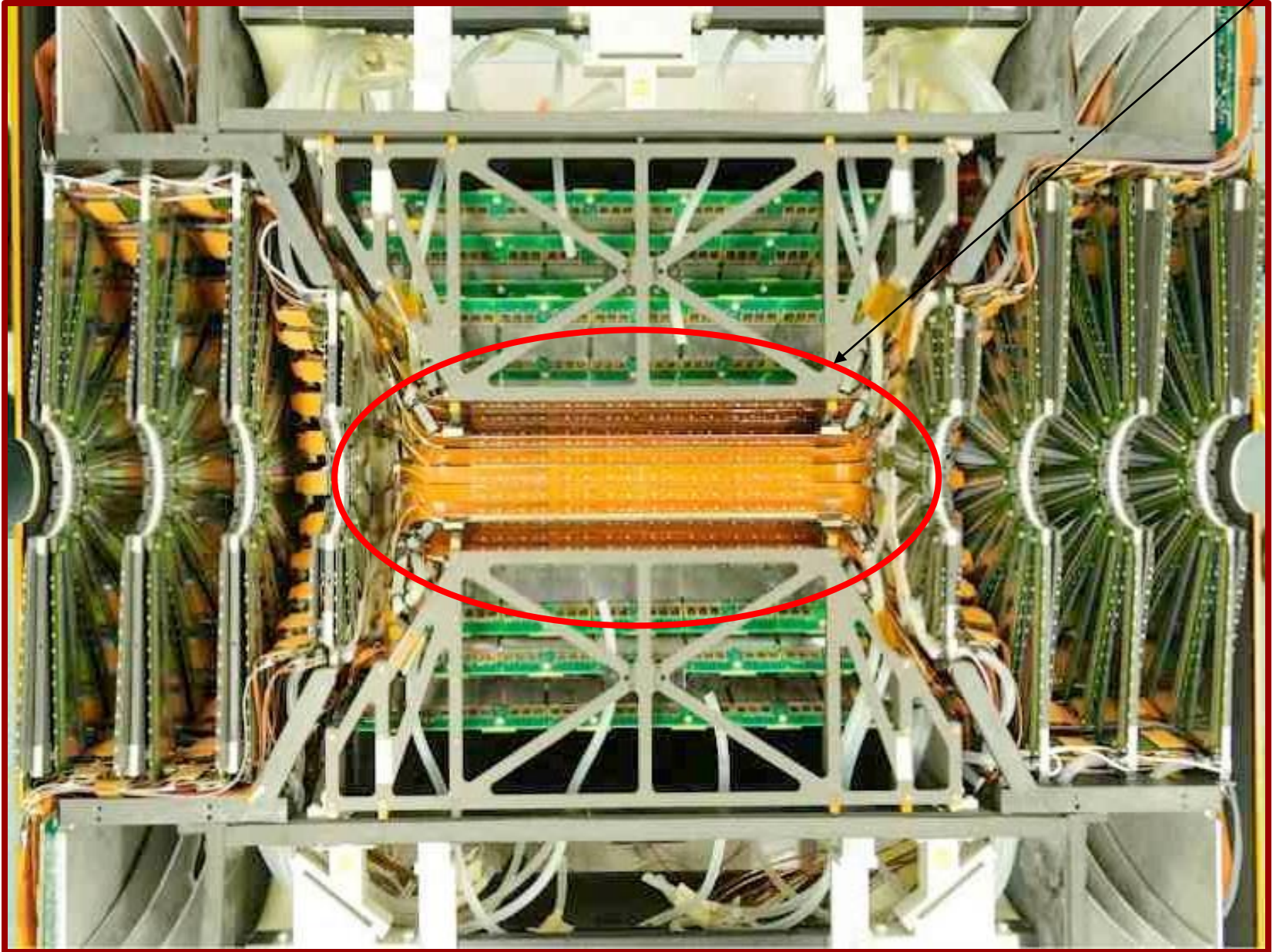
Rachid Nouicer

Richard Ruggiero and Chris Pontieri

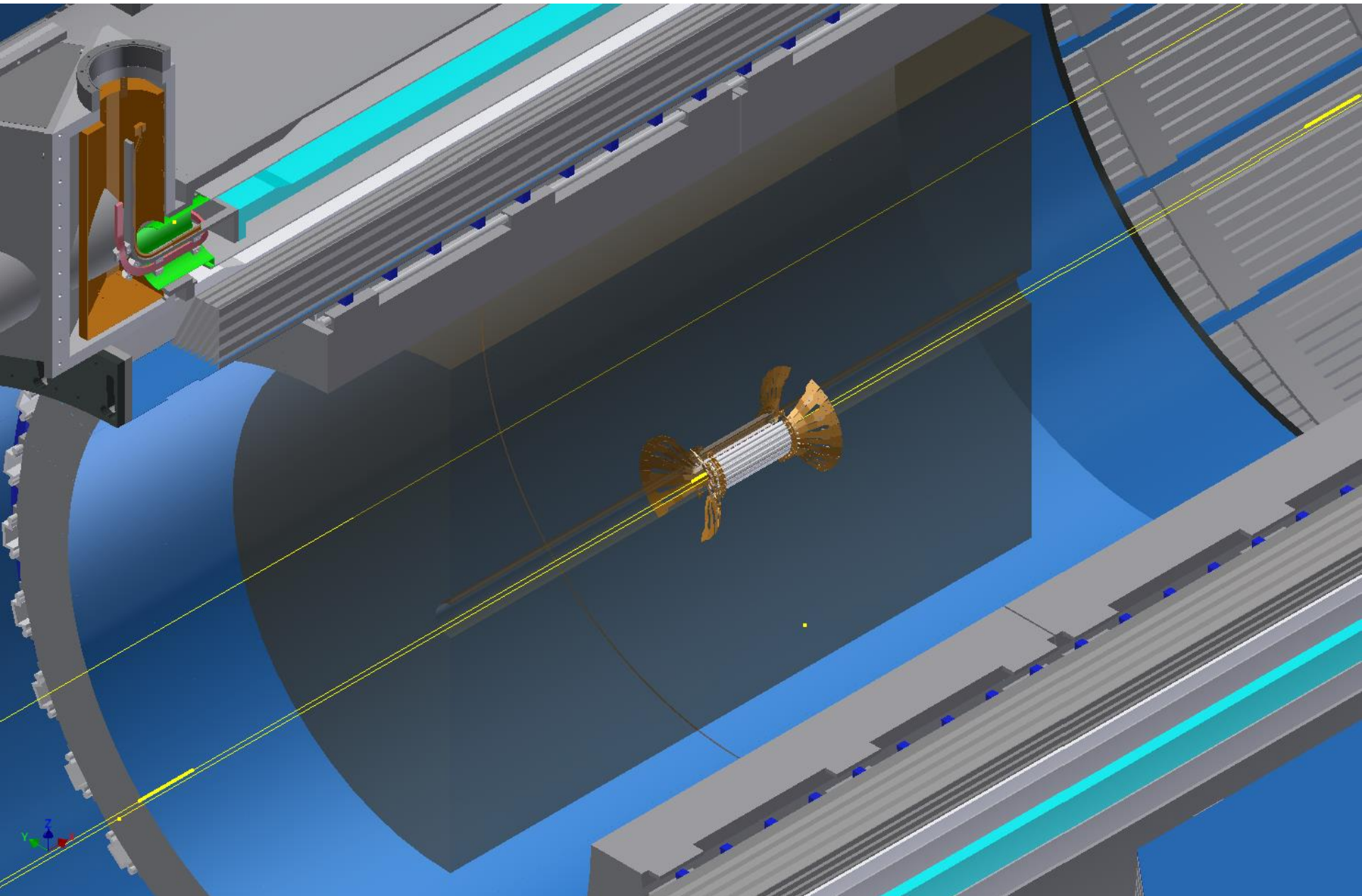
BNL

sPHENIX Tracking Meeting, April 14th, 2016

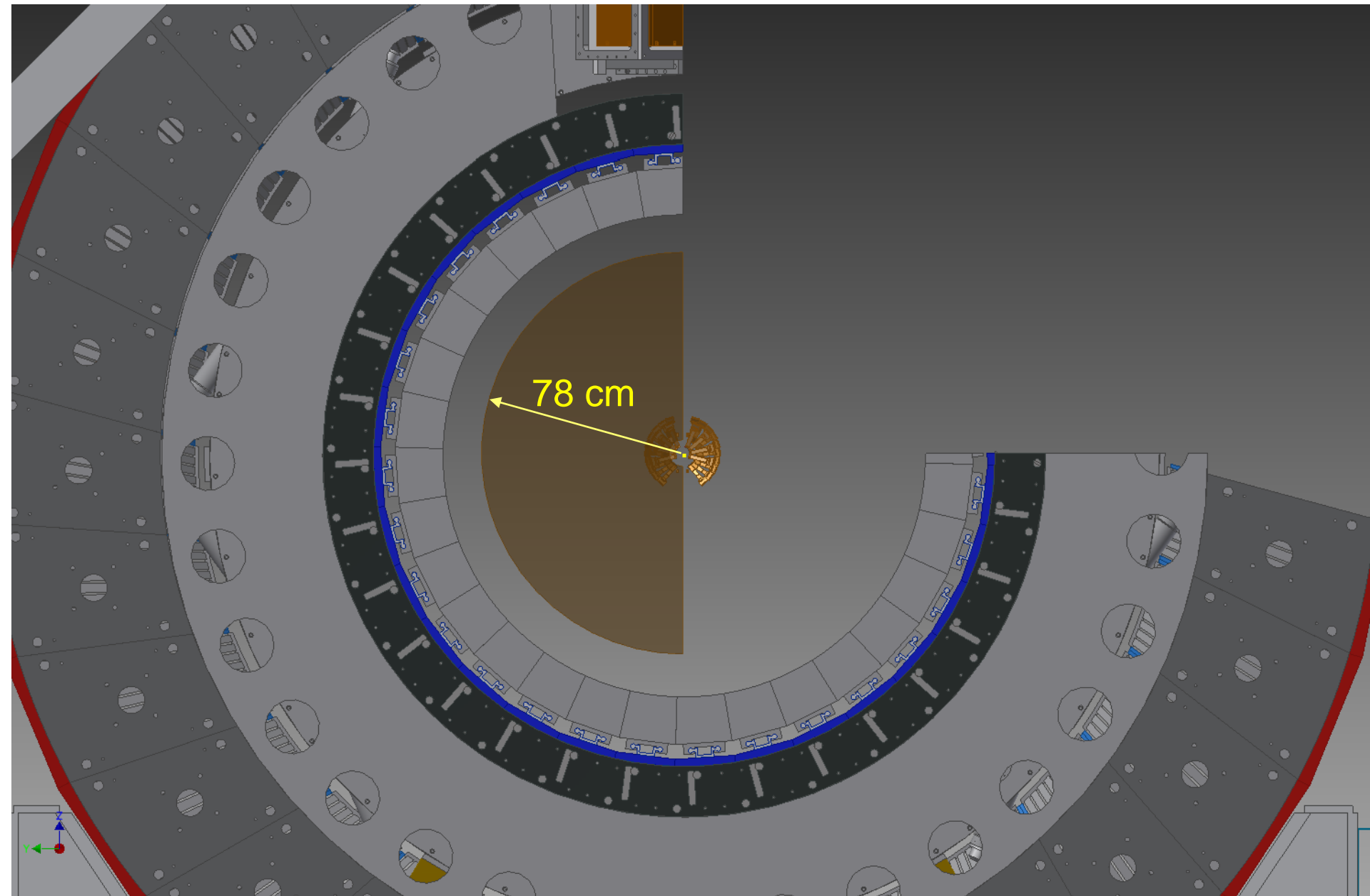
How to integrate Silicon Pixels into sPHENIX?



Pixels layers P0 and P1 in sPHENIX

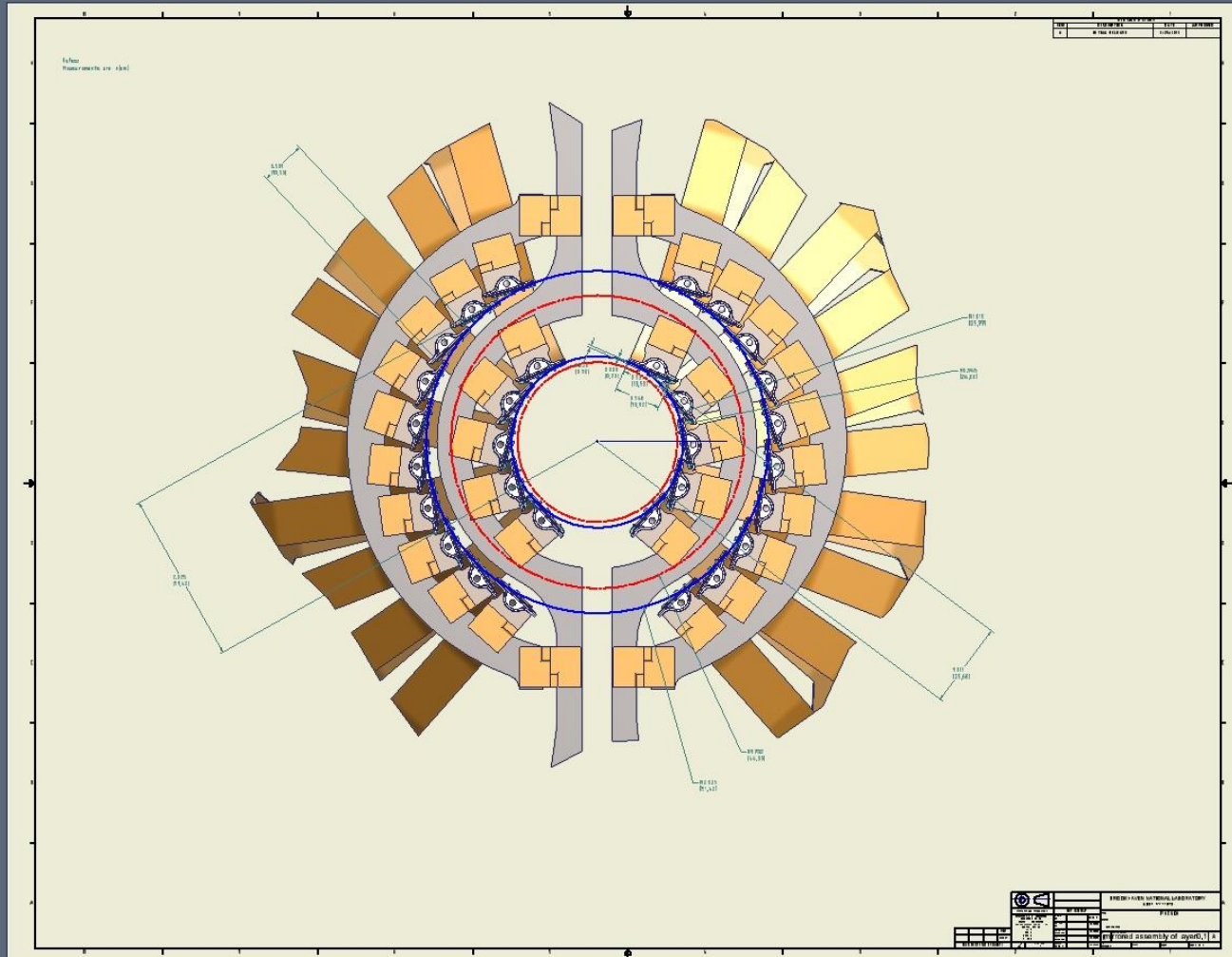


Tracking Envelop in sPHENIX: 78 cm



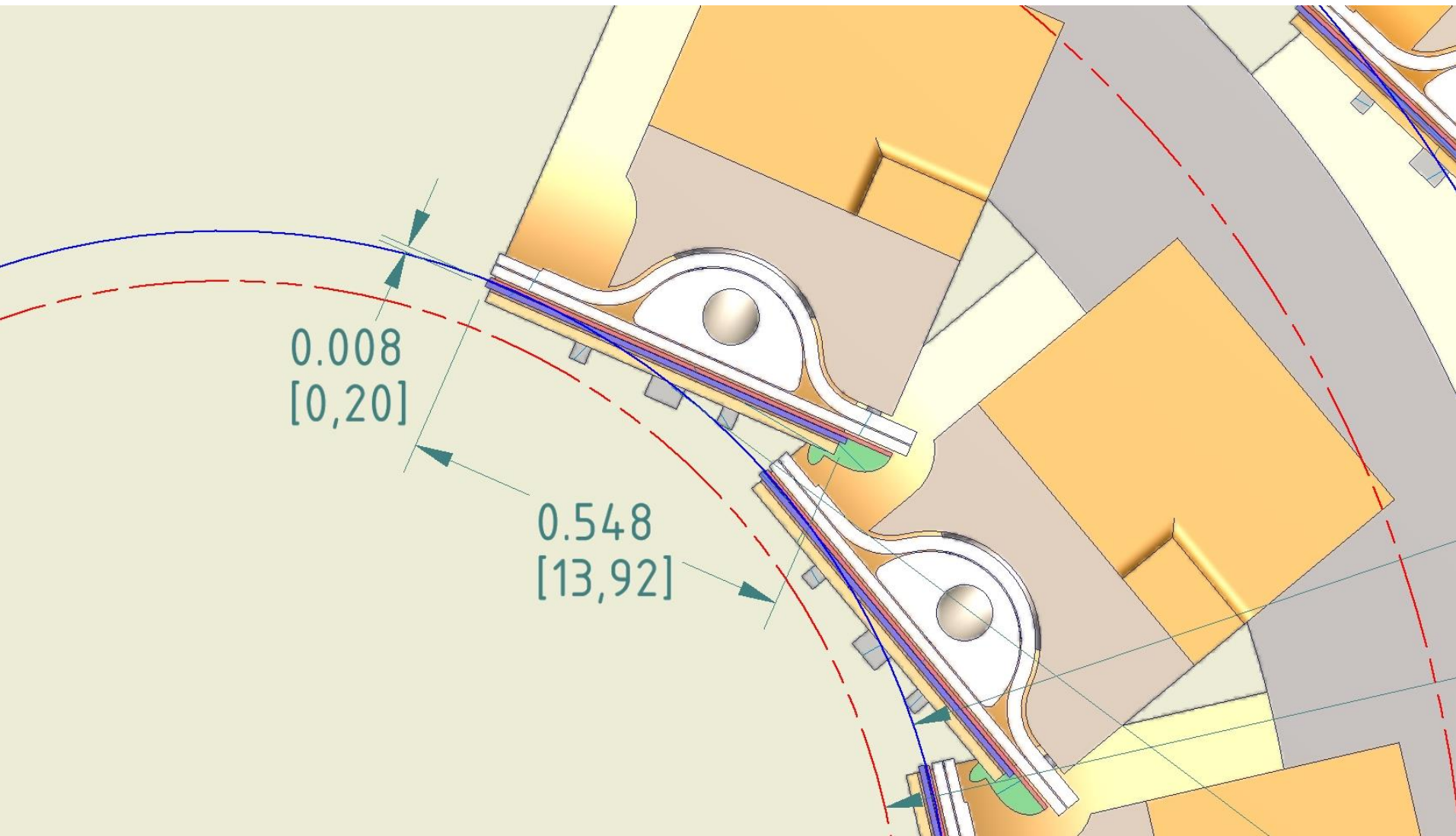
To do List

- How many ladders are needed for P0 and P1 to have full coverage in sPHENIX?



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Note: Barrels configurations (P0 and P1) should include everything:

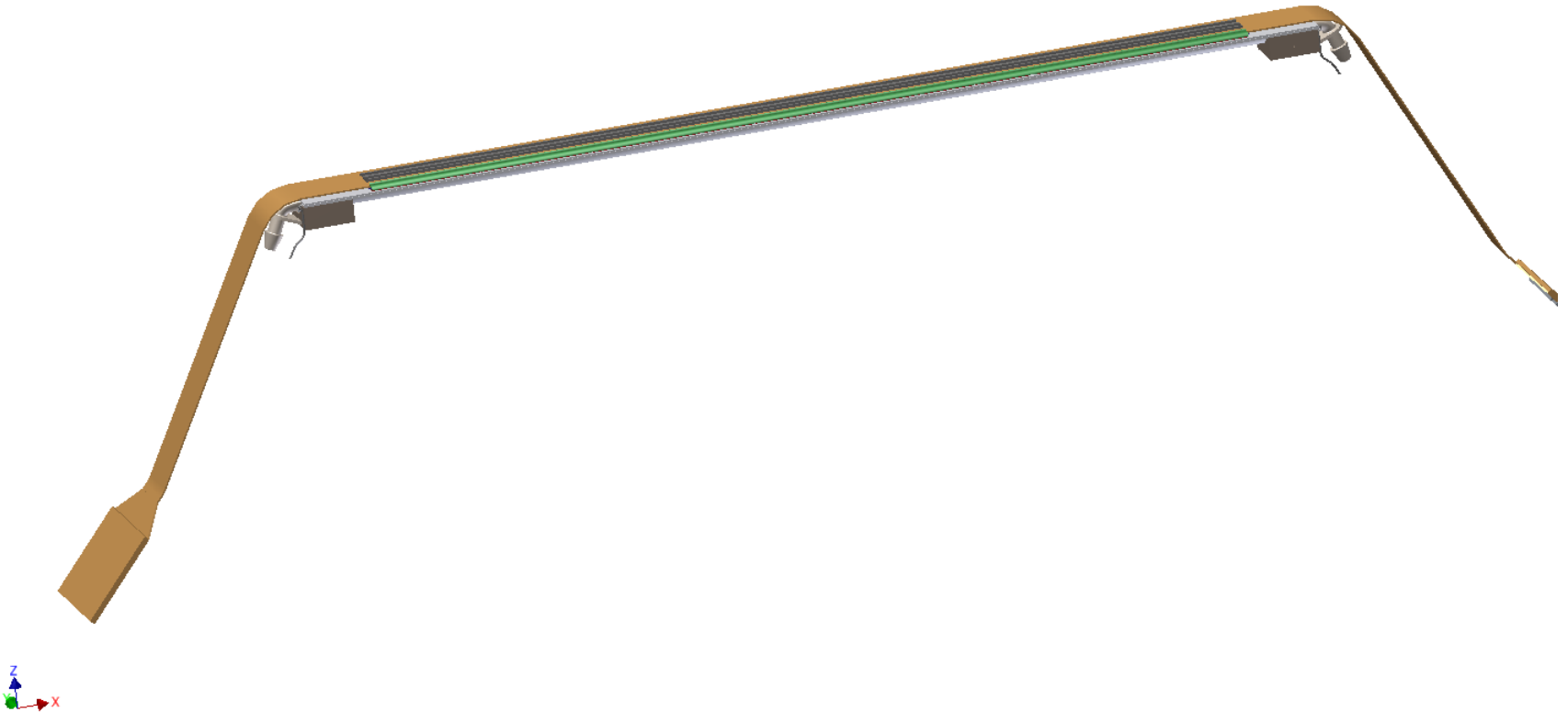
- Full Ladder configuration (chips, sensor...)
- CFC for cooling and ladder support
- Readout bus

Back to the Drawing Board.

hips Pattern Productivity Work Features

Exact Drawing of Pixel ladder used in VTX-Geometry PHENIX

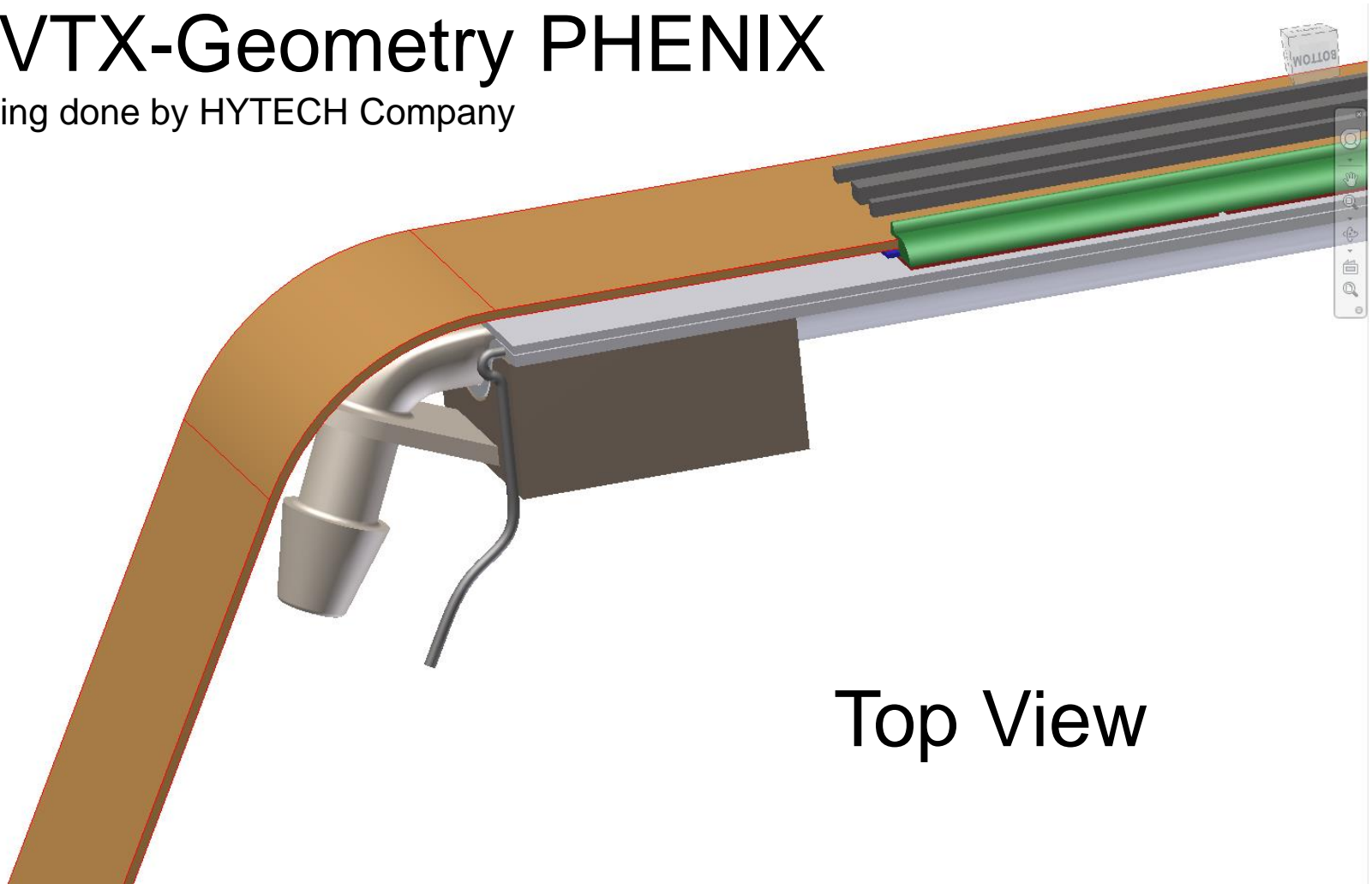
Drawing done by HYTECH Company



Back to the Drawing Board.

Exact Drawing of Pixel ladder used in VTX-Geometry PHENIX

Drawing done by HYTECH Company



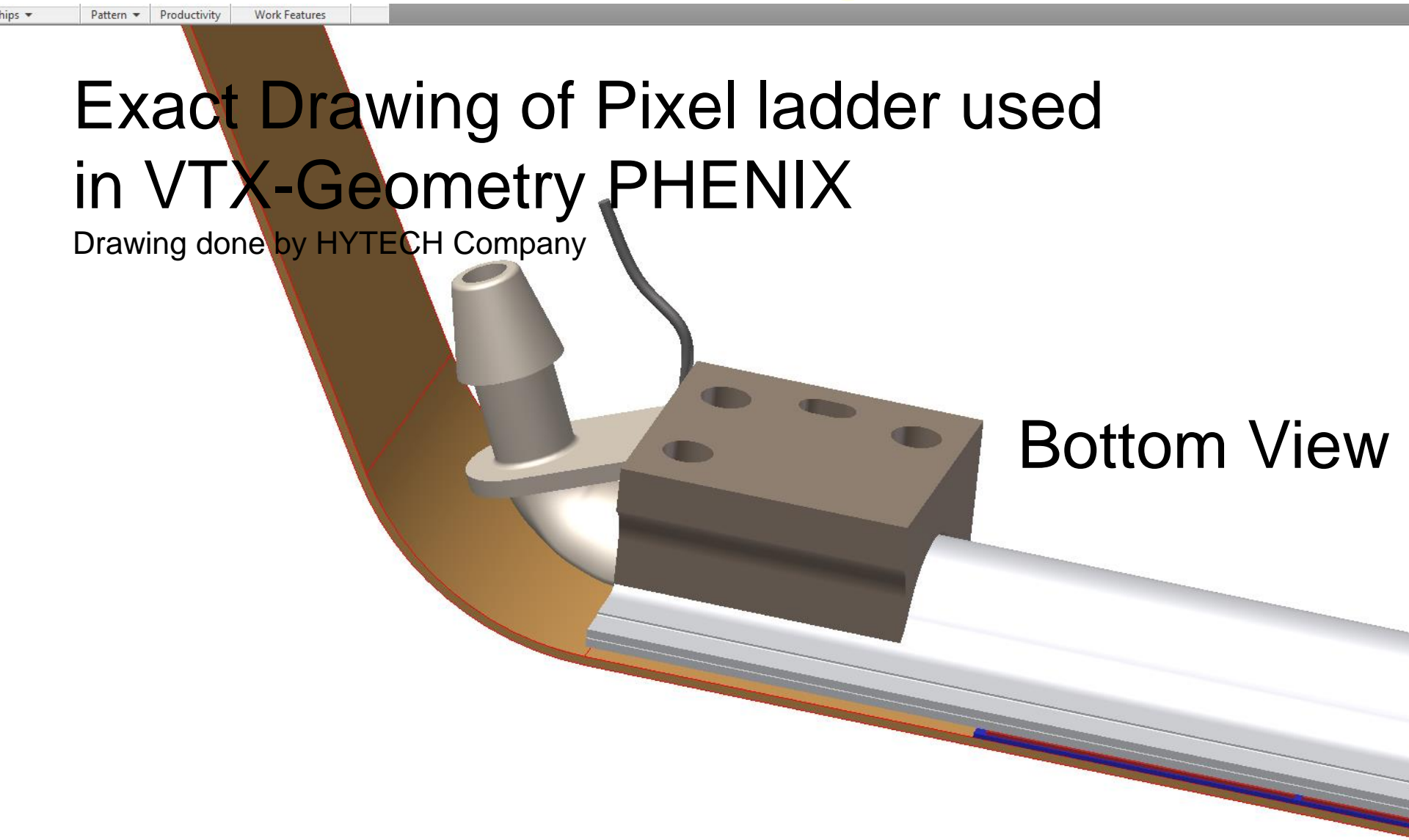
Top View

Back to the Drawing Board.

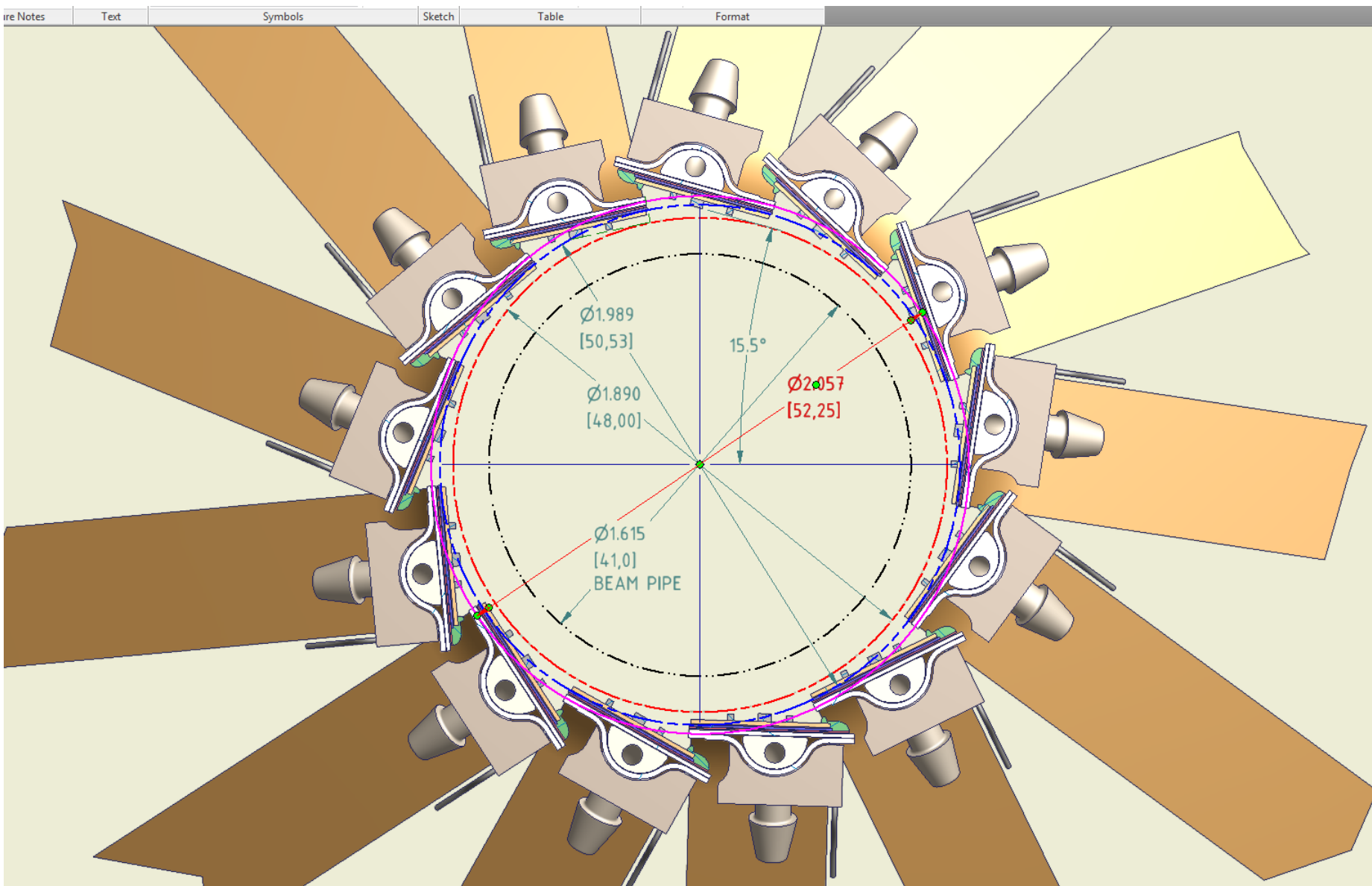
Exact Drawing of Pixel ladder used in VTX-Geometry PHENIX

Drawing done by HYTECH Company

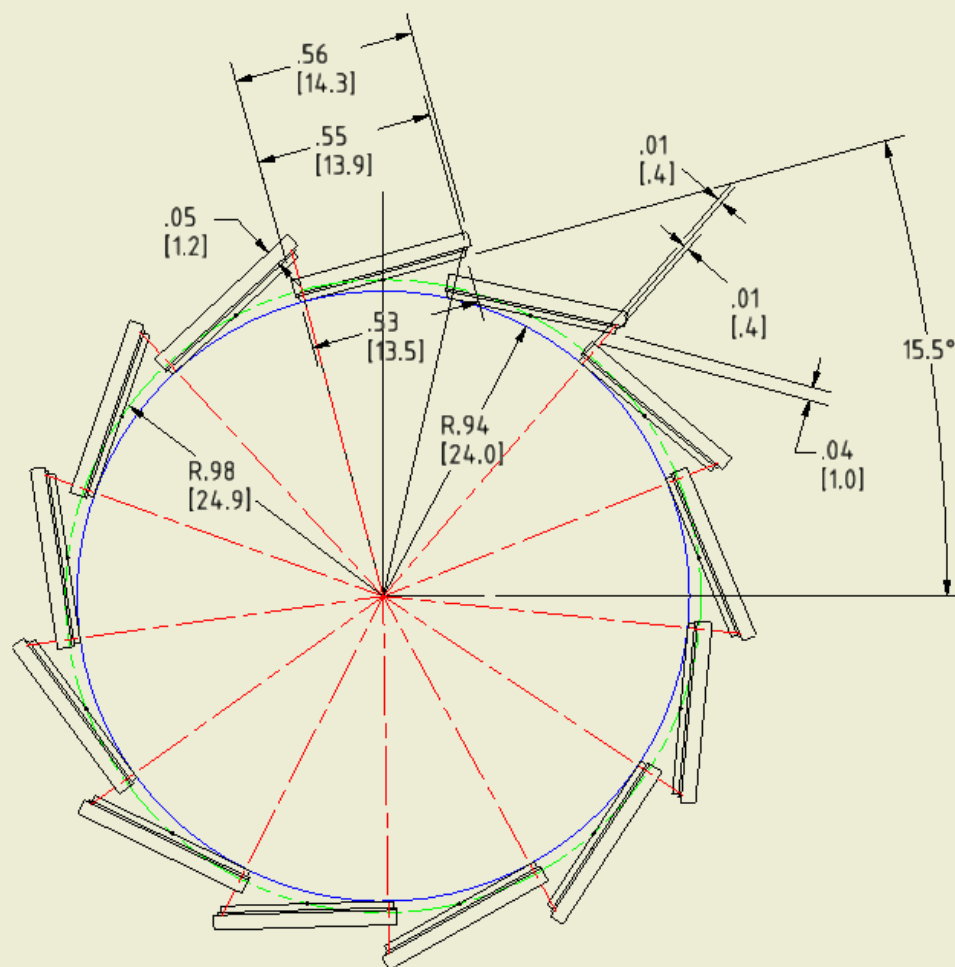
Bottom View



➤ How many ladders are needed for P0 to have full coverage in sPHENIX?



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13 LADDERS P0

PRELIMINARY
2/10/2016

Full coverage in sPHENIX

- How many ladders are needed for P0?
 - Answer: 13 ladders
- What the radius r_0 (P0) to the center of the sensor?
 - Answer: r_0 (P0) = 2.613 cm (Four significant figures)
- Tilt angle of each ladder is 15.5 degrees

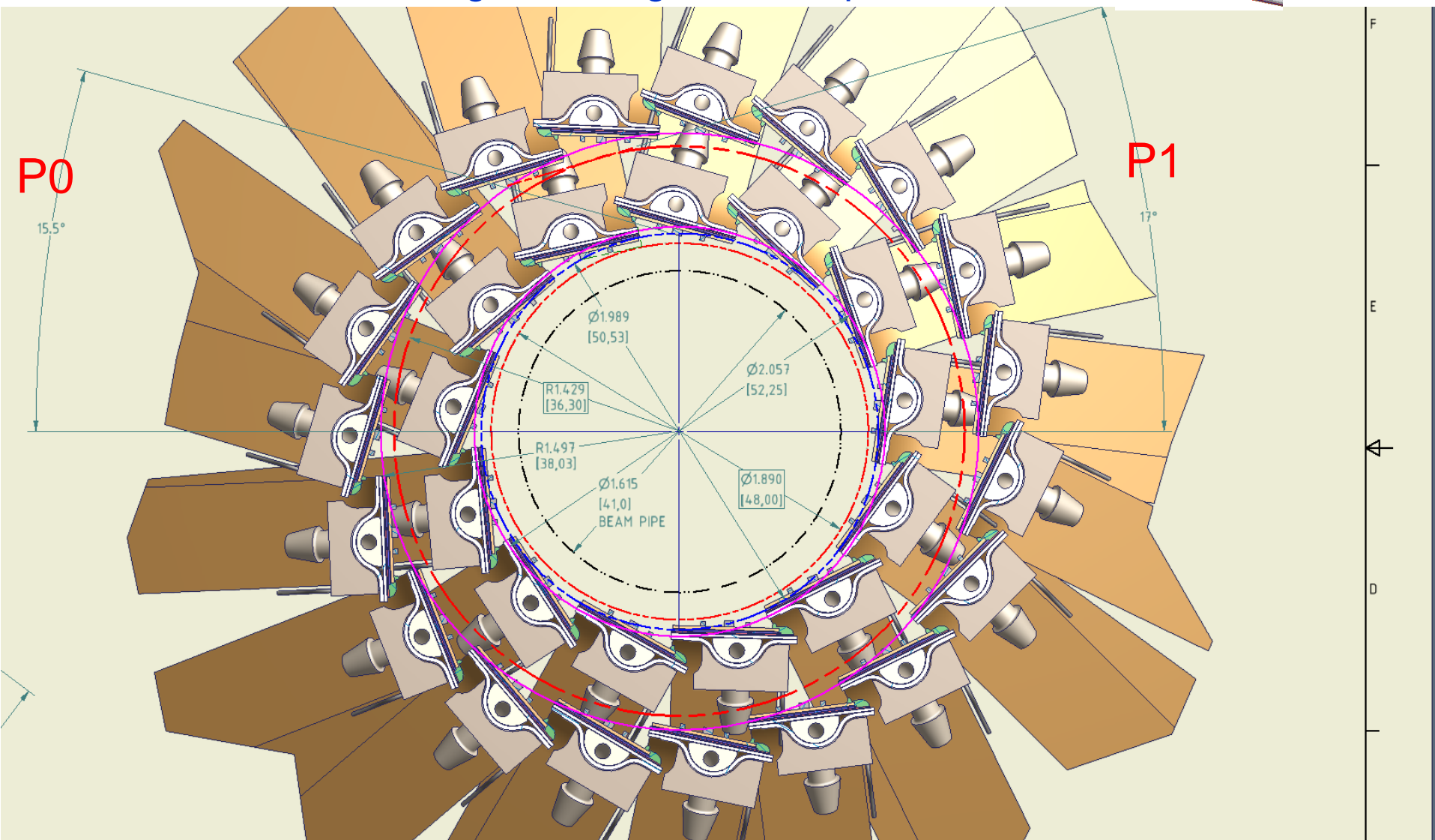
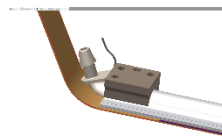
What about P1 barrel?

- How many ladders are needed for **P1**?
 - What the radius **r_1 (P1)**?

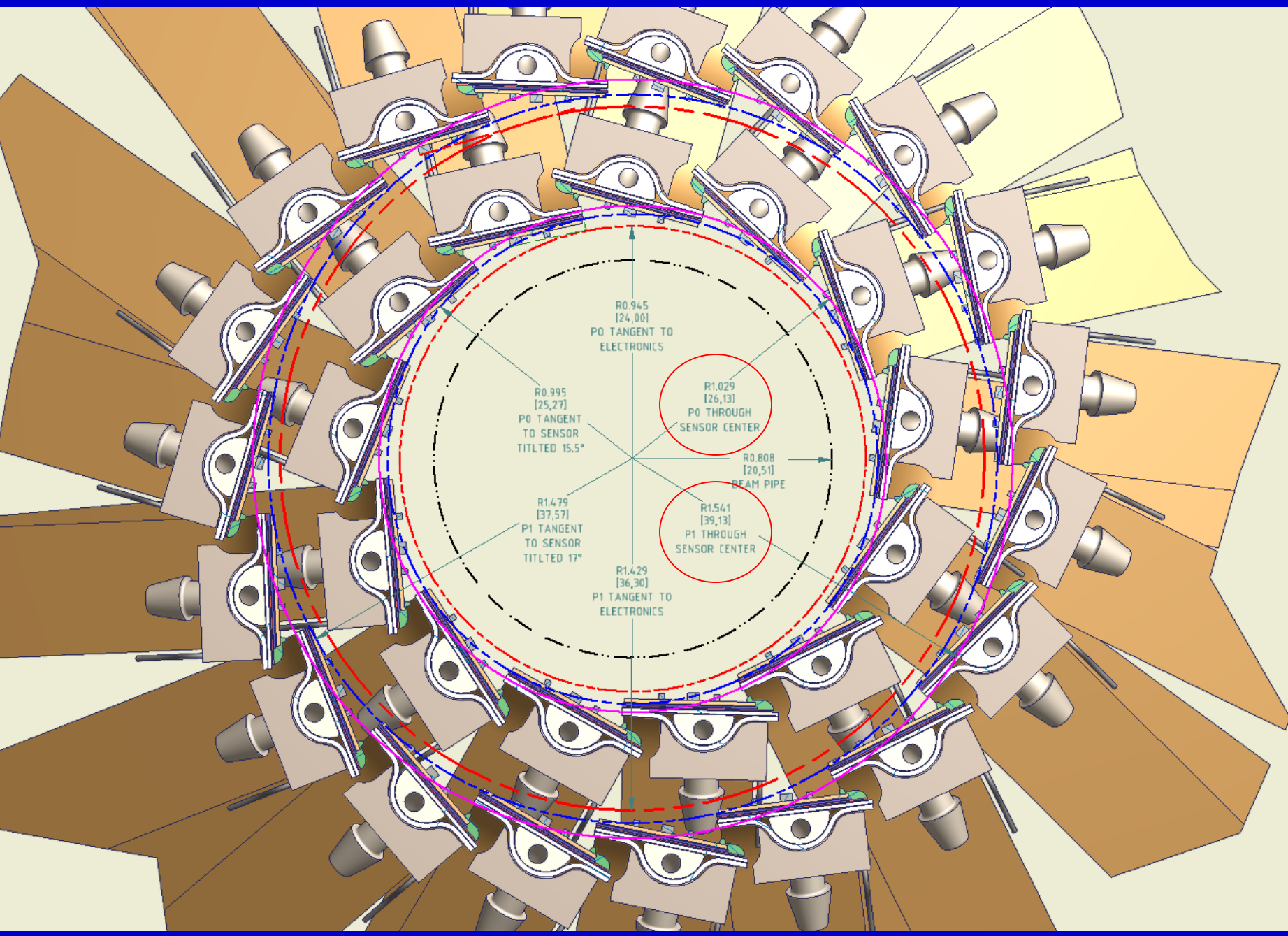
for full coverage in sPHENIX?

Configuration of Barrel P1 for sPHENIX

We follow same procedure as we did in P0:
using full configuration of pixel ladder



Configuration of Barrel P1 for sPHENIX



Full coverage in sPHENIX

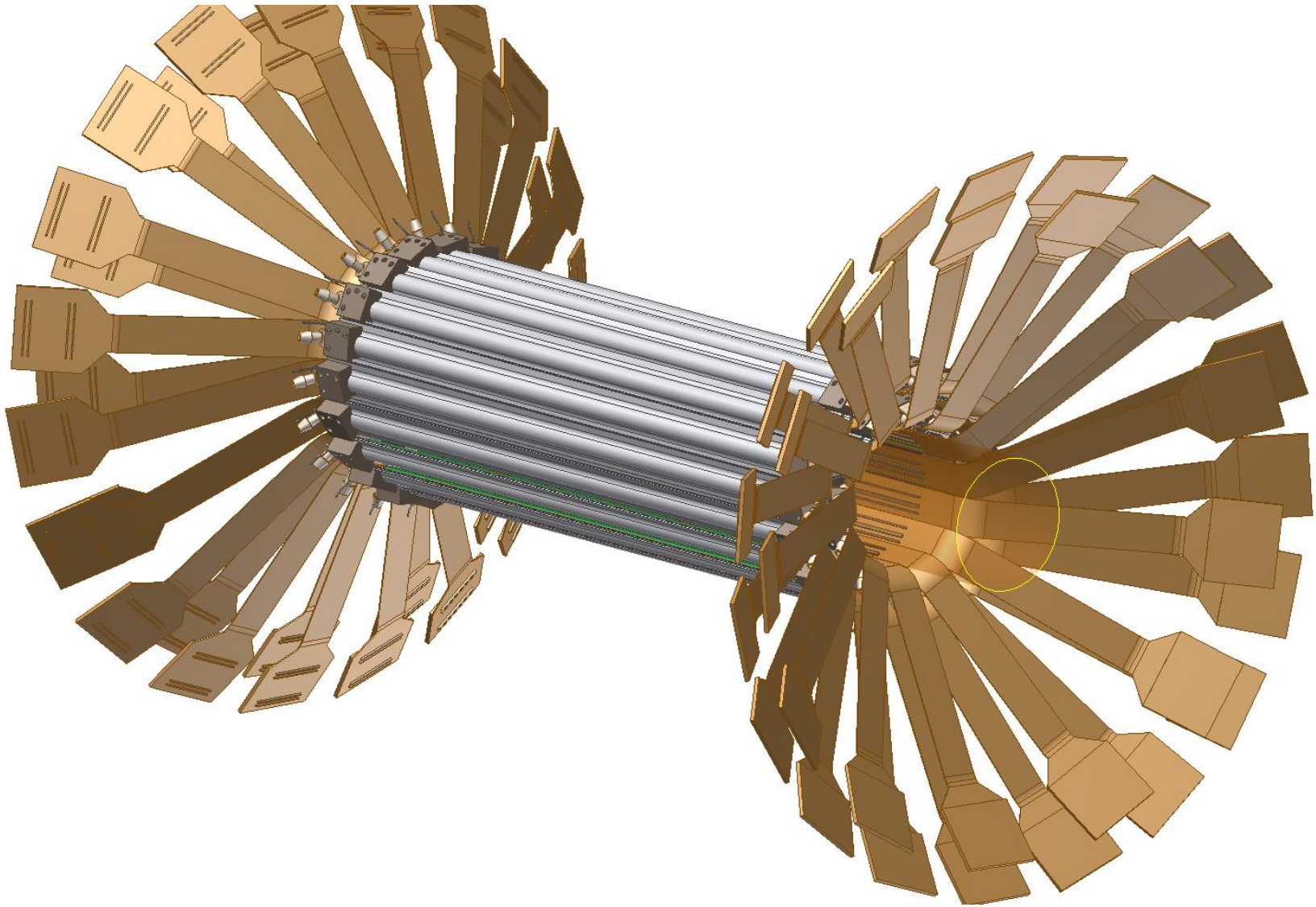
- How many ladders are needed for P1?
 - Answer: 19 ladders

What the radius r_1 (P1) to the center of the sensor?

- Answer: r_1 (P1) = 3.913 cm (Four significant figures)

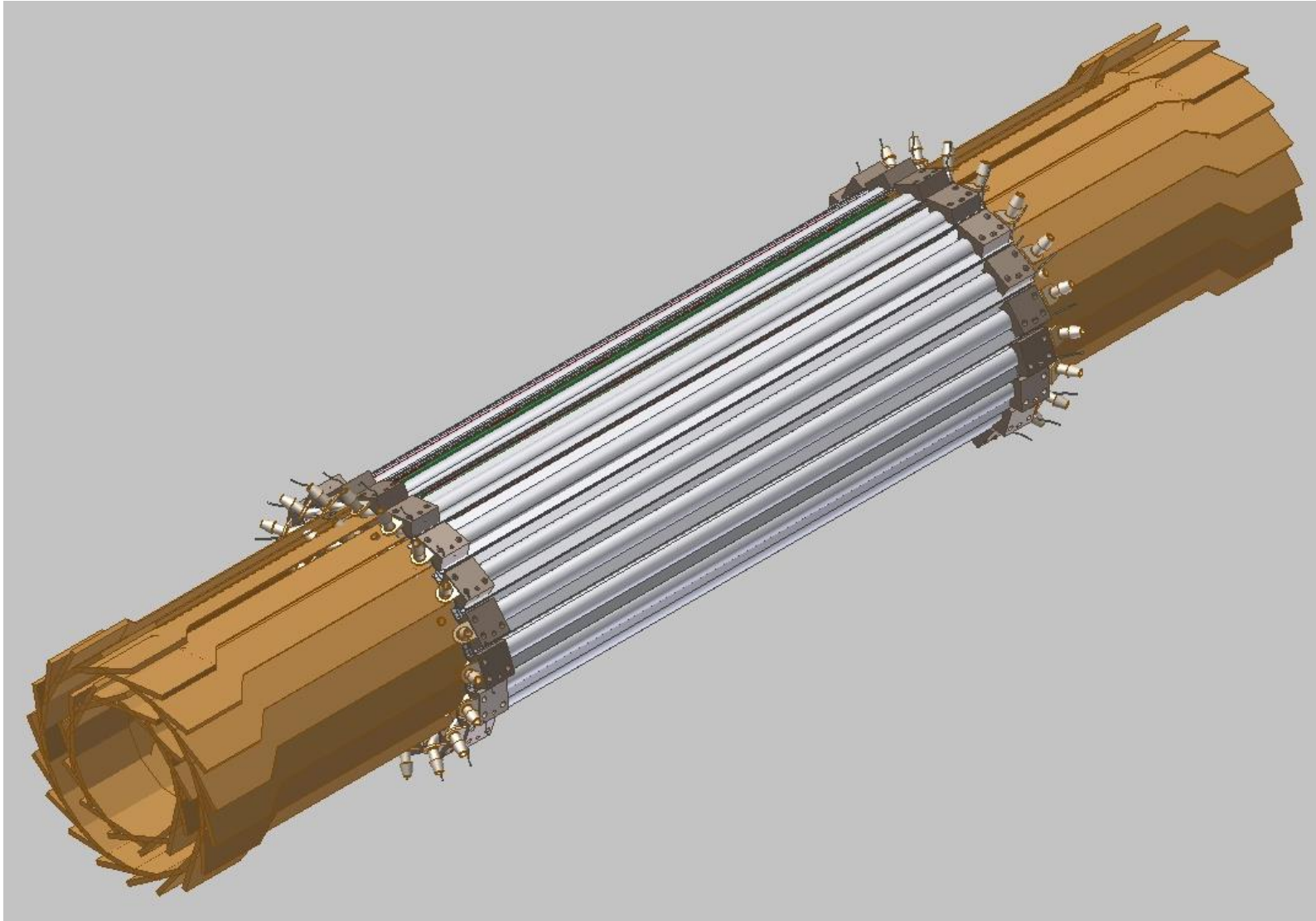
- Tilt angle of each ladder is 17.0 degrees

P0 and P1 Barrels (2π coverage)



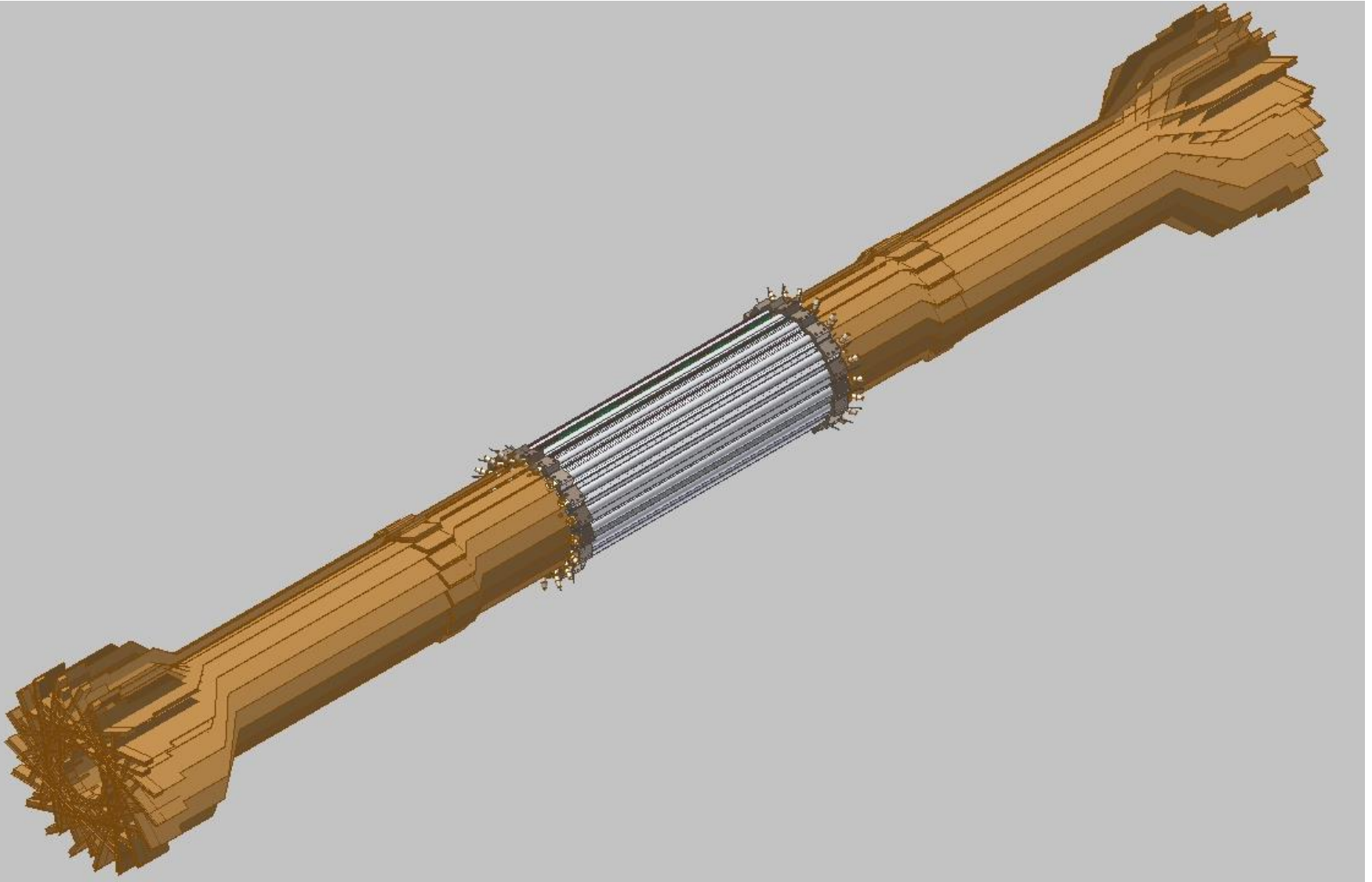
P0 and P1 Barrels (2π coverage)

Bus cables around beam pipe

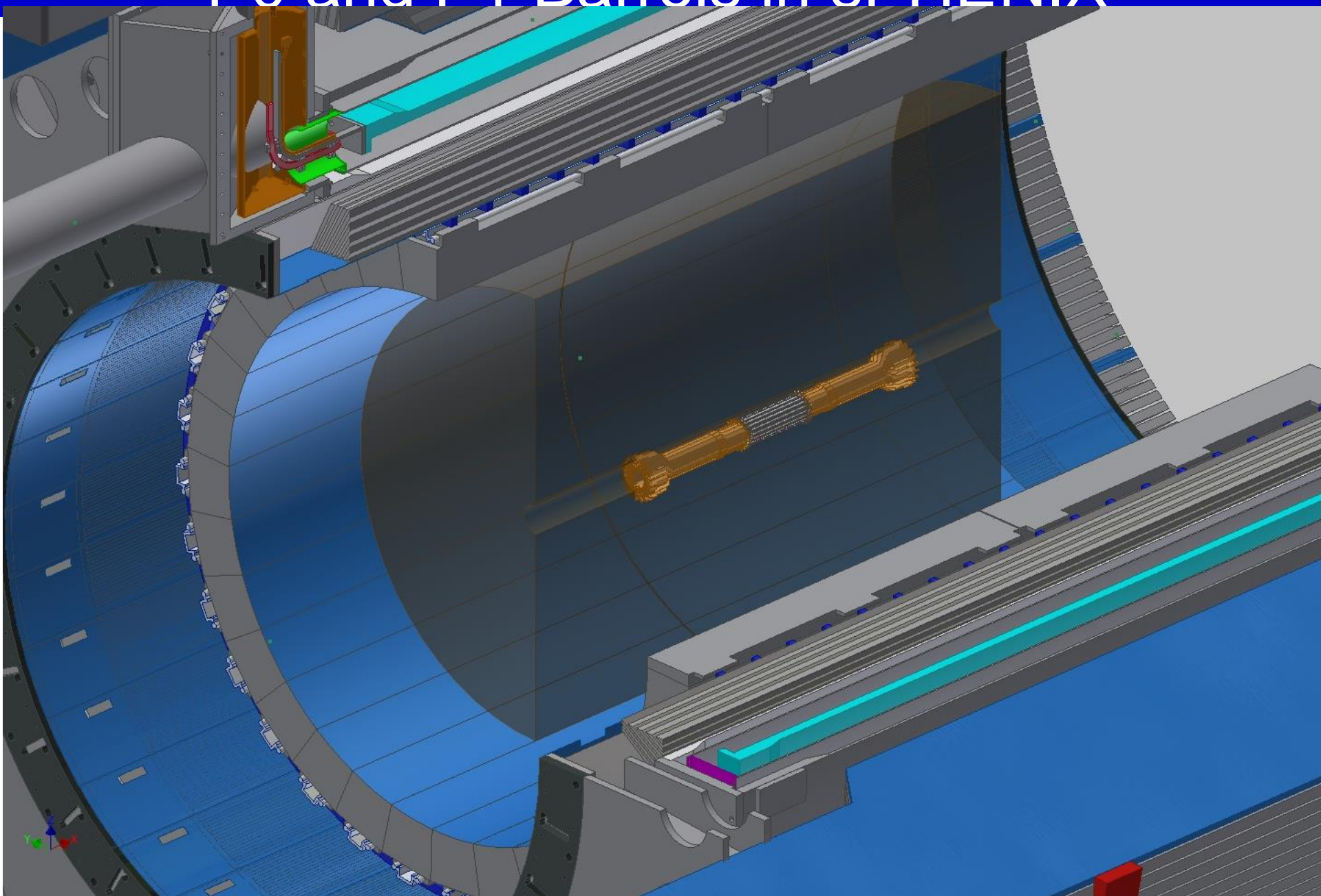


P0 and P1 Barrels (2π coverage)

Adding Bus Extender cables



P0 and P1 Barrels in sPHENIX



Conclusion

**Integration of
P0 and P1 Pixel barrels in sPHENIX
is done.**

Note: This information needs to be implemented in sPHENIX's Geant to ensure that physics goals are the same (or better) with these new configurations (P0 and P1).